US008556675B2

(12) **United States Patent**
Gonzalez

(10) **Patent No.: US 8,556,675 B2**
(45) **Date of Patent: Oct. 15, 2013**

(54) **BALLOON TOY AND METHOD OF USE**

(76) Inventor: **Alejandro Doring Gonzalez**, La Jolla, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 171 days.

(21) Appl. No.: **13/346,956**

(22) Filed: **Jan. 10, 2012**

(65) **Prior Publication Data**

US 2013/0178132 A1 Jul. 11, 2013

(51) **Int. Cl.**
A63H 33/00 (2006.01)

(52) **U.S. Cl.**
USPC **446/220**

(58) **Field of Classification Search**
USPC 446/220
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,202,378	A *	8/1965	Williamson	242/390.8
3,592,157	A *	7/1971	Schwartz	340/815.74
3,593,940	A	7/1971	Stanton	
3,822,839	A *	7/1974	Persichini	242/390.8
4,729,750	A *	3/1988	Prusman	446/225
5,071,085	A	12/1991	Beers	
5,238,200	A	8/1993	Ritzenthaler	
5,947,790	A	9/1999	Gordon	
7,674,152	B2 *	3/2010	Anderson	446/220

FOREIGN PATENT DOCUMENTS

EP	1427632	1/2005
JP	06-017508	5/1994
JP	3010385	2/1995
JP	08-266747	10/1996

OTHER PUBLICATIONS

Notification, International Search Report and Written Opinion dated Mar. 19, 2013 for PCT/US2012/69004.

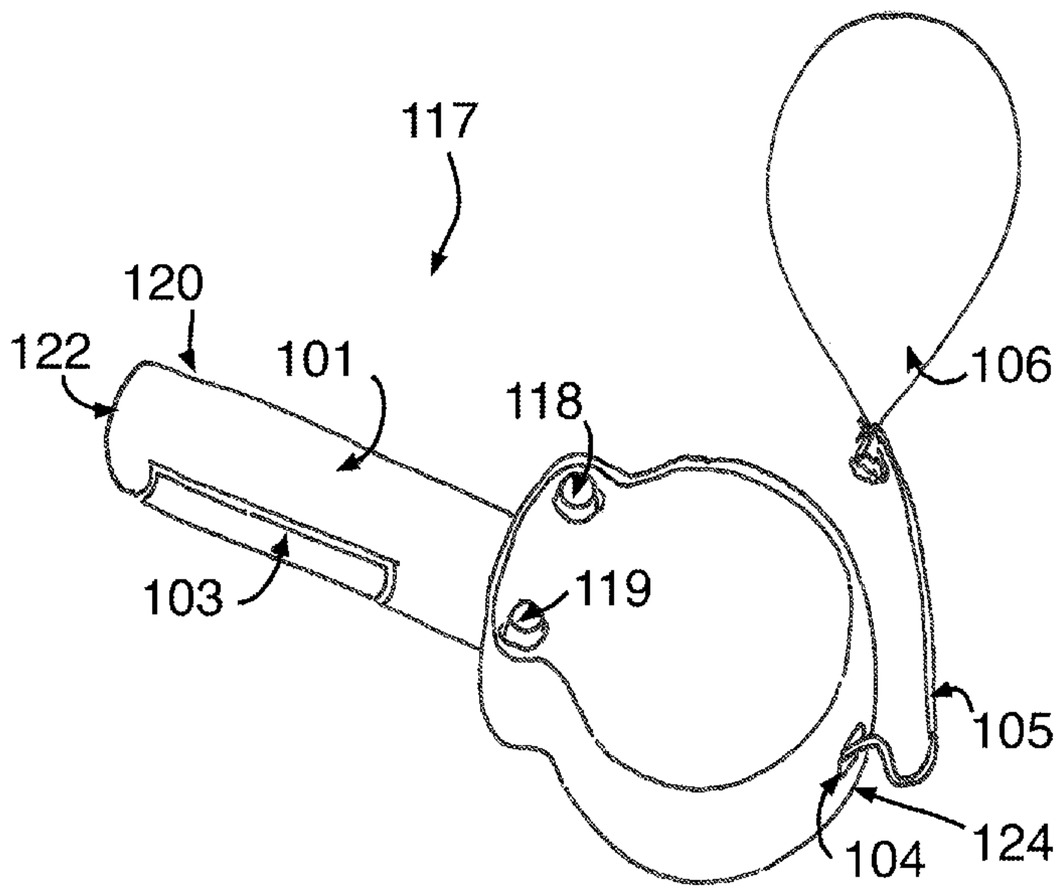
* cited by examiner

Primary Examiner — Michael Dennis
(74) *Attorney, Agent, or Firm* — Stephen C. Beuerle; Procopio Cory Hargreaves & Savitch LLP

(57) **ABSTRACT**

A balloon toy includes a helium-filled balloon; a balloon string tethered to the balloon; and a balloon raising and lowering assembly including: a housing including a handle; a balloon string reel rotatably carried within the housing and carrying the balloon string; an electric motor carried within the housing; a power source carried within the housing for powering the electric motor; a gear assembly including a plurality of gears carried with the housing and operable coupling the electric motor to the balloon string reel for driving rotation of the balloon string reel; a biasing member including a biasing force that urges the gear assembly together so that the plurality of gears are engaged for driving rotation of the balloon string reel for drawing in the balloon string and helium-field balloon and allows the plurality of gears to slip relative to each other if tension on the balloon string is too high.

9 Claims, 4 Drawing Sheets



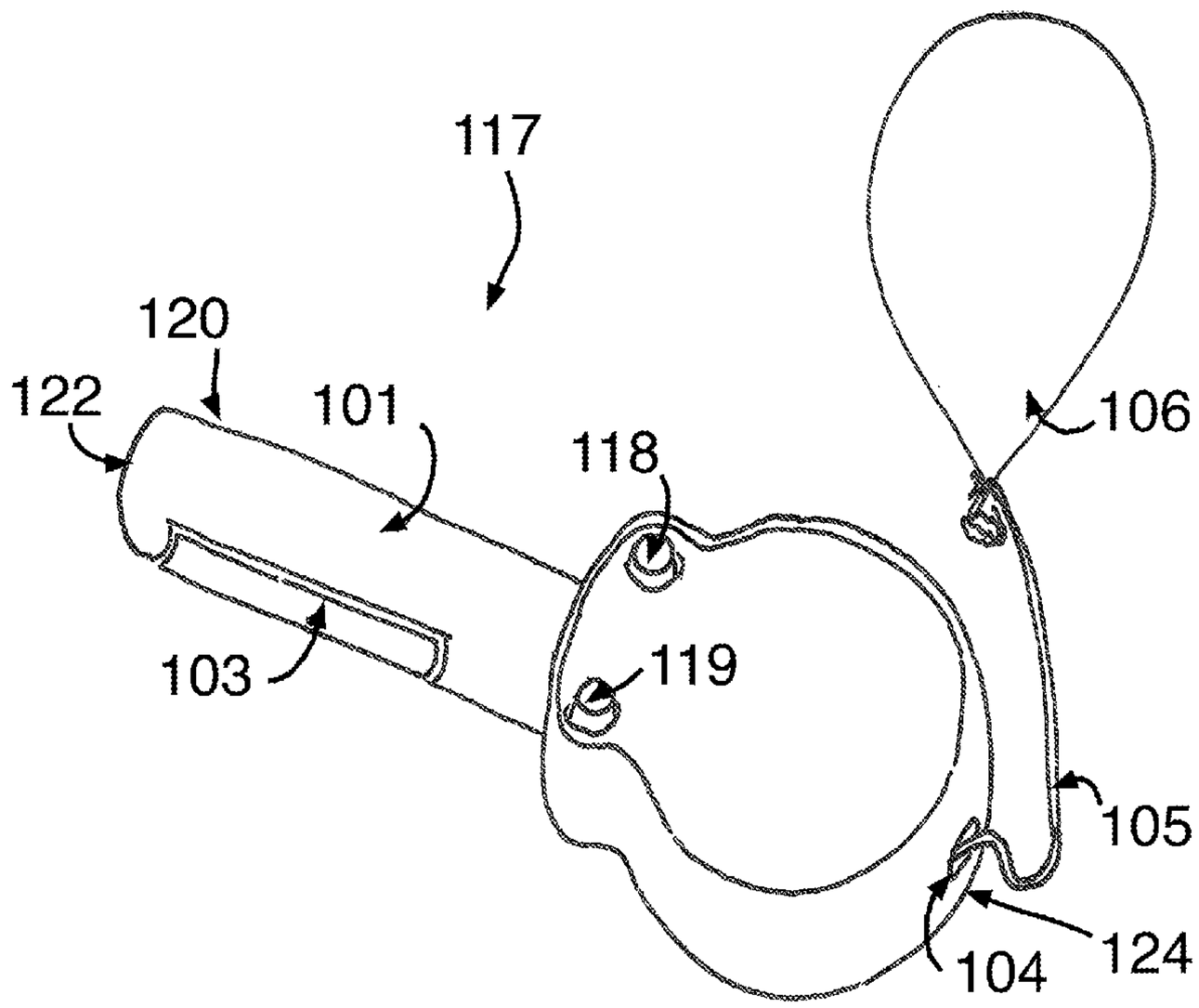


FIG. 1

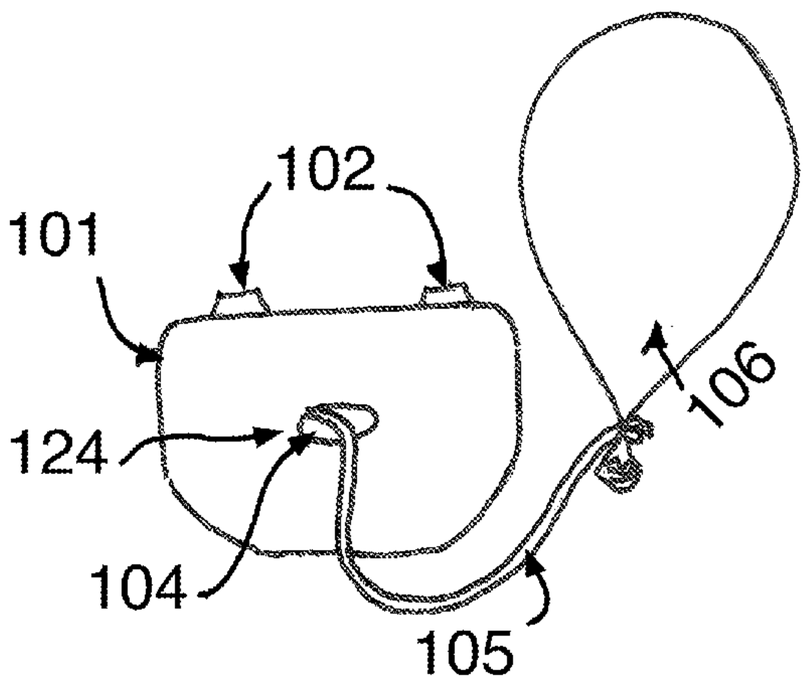


FIG. 2

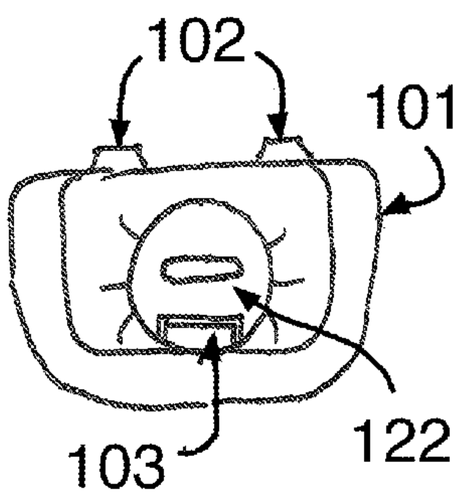


FIG. 3

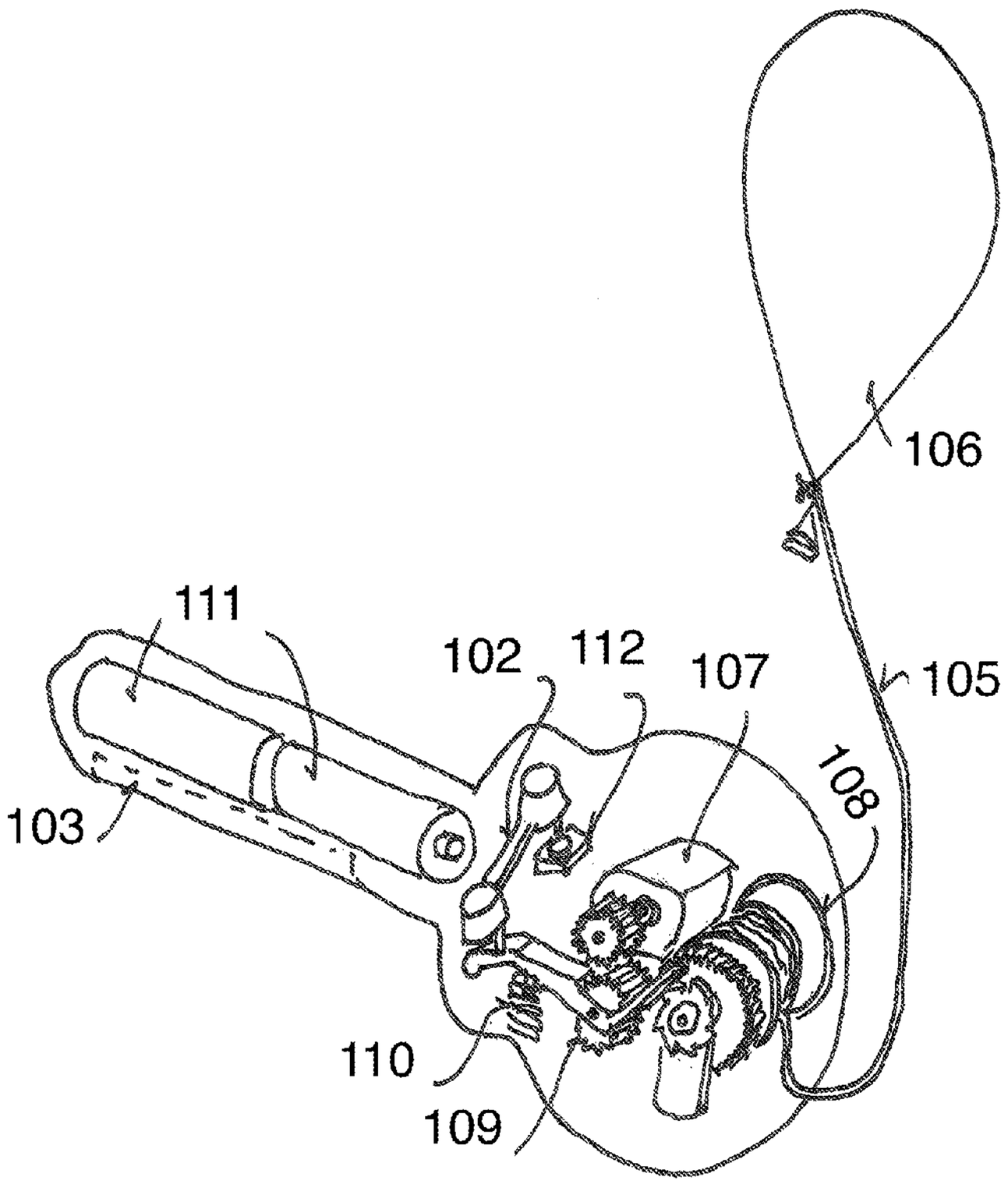


FIG. 4

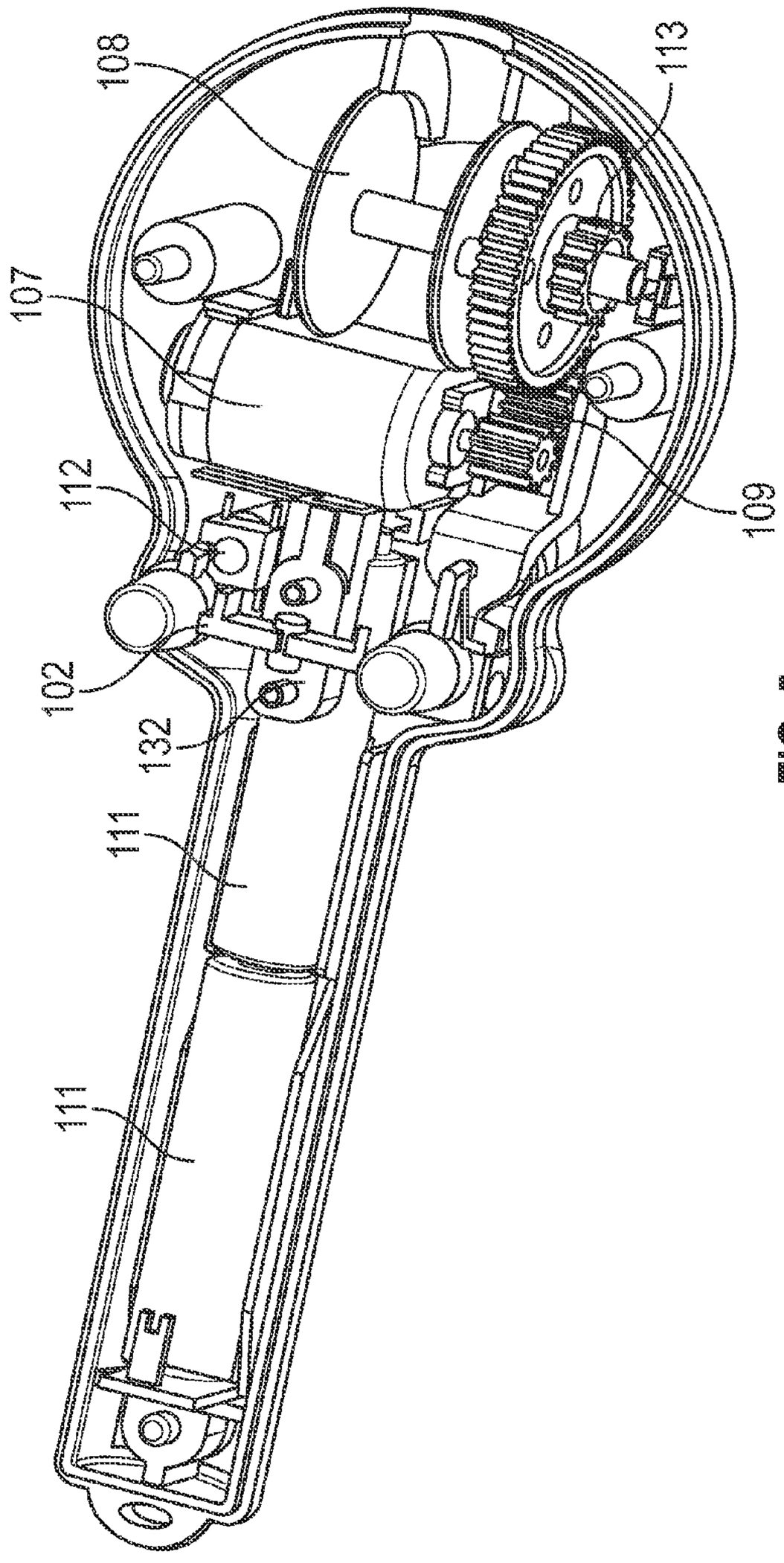


FIG. 5

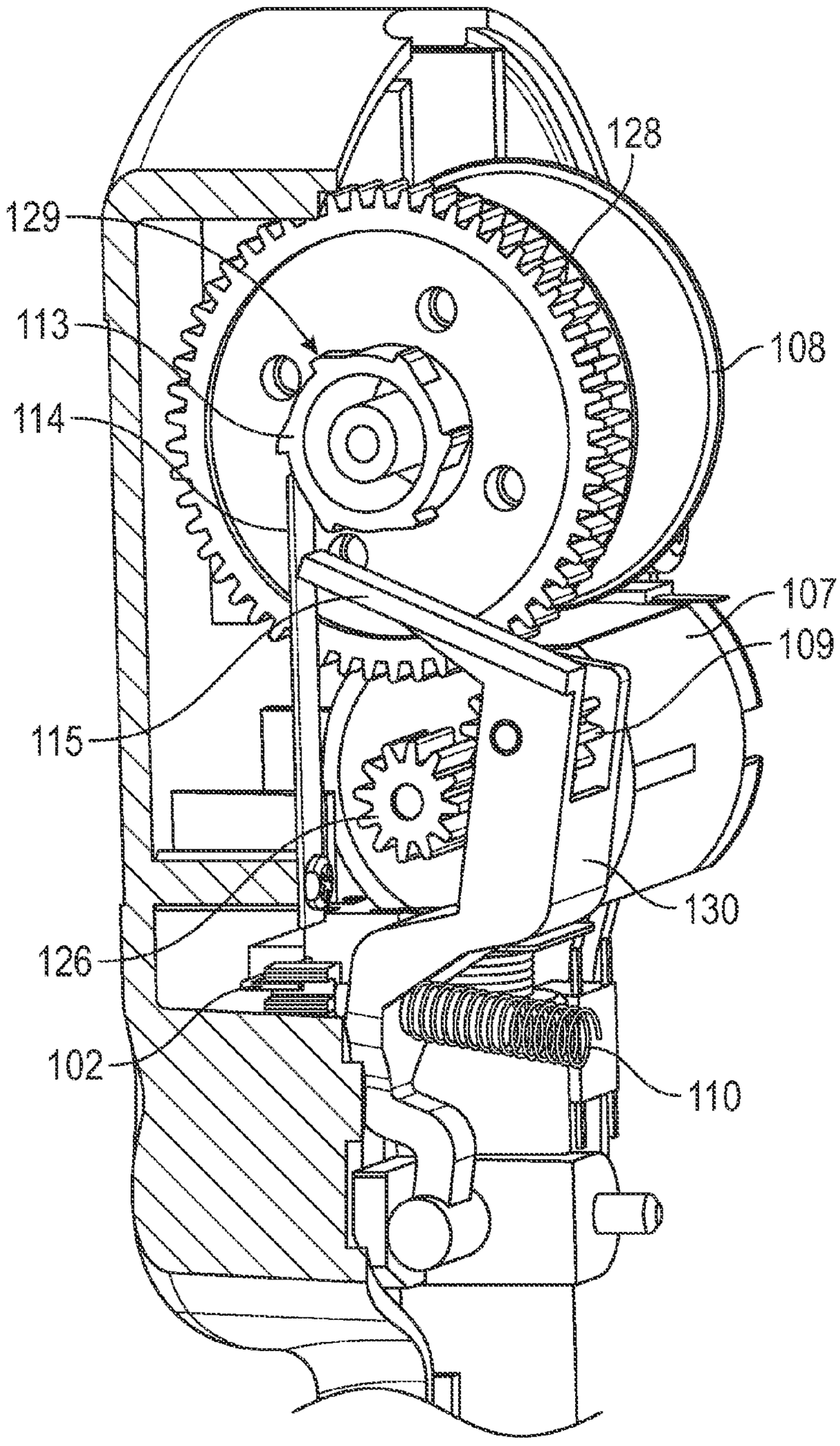


FIG. 6

BALLOON TOY AND METHOD OF USE

BACKGROUND

1. Field of the Invention

The present invention is in the field of balloon toys for helium-filled balloons.

2. Related Art

Balloons filled with helium are widely used for children's enjoyment. In general, these balloons are not offered with any other purpose or additional potential other than a weight so the balloon will not fly away.

SUMMARY OF THE INVENTION

Accordingly, an aspect the invention involves a balloon toy that increase a child's enjoyment of a helium-filled balloon. The balloon toy can be held by the child and is simple and easy to operate. The balloon toy includes an elongated housing with a small aperture at a front end where a balloon string attached to a helium-field balloon protrudes. The housing carries a power source in a handle of the housing near its rear end. The power source powers a motorized reel assemblage within the housing adjacent its front end. An UP/DEFAULT-BRAKE/DOWN switch is used to activate and deactivate the power source for powering the internal motorized reel. The balloon toy enhances the pleasure of having a helium-filled balloon through the internal motorized reel in the toy that releases or retracts the balloon string, allowing the child to control the altitude of the balloon by lengthening and shortening the length of the balloon string with the push of a button on the toy. The balloon toy is light-weight and its size is easily grasped by a child's hand. This balloon toy will animate amusement parks in general as balloons will change constantly on the horizon as multiple users engage in its use.

One or more implementations of the above aspect of the invention include one or more of the following: the power source comprises an electrical battery pack and motor; the power source is provided by a solar panel and motor; the motorized reel assembly includes a spool on a fixed anchor that turns in tandem with the motor by means of a band and sprockets; the activation and deactivation is in the form of a DPDT electrical switch; and/or the activation and deactivation is in the form of a simple switch for the motor and a gear release function on the switch.

Another aspect of the invention involves a balloon toy including a mechanism which allows the release of the helium-filled balloon at different speeds and prevents the release of the string from backing up in the housing and snagging. The balloon is returned to the user in a fast-motorized manner that can be controlled by starting or stopping the motor and thus controlling the return rate of the balloon. A return gear of the motor is biased into gear engagement by a spring so that if the balloon encounters high winds or a tree branch, the return gear disengages (i.e., gears slip relative to each other) so that the motor will not immediately compromise the balloon string and cause it snap. This spring-engaged gear also prevents the motor from burning out with no movement of the string (e.g., if the balloon encounters high winds or a tree branch), which lengthens the life of the motor.

The user can then wait to remedy the undesirable condition.

A further aspect of the invention involves a balloon toy including a helium-filled balloon; a balloon string tethered to the balloon; and a balloon raising and lowering assembly including: a housing including a handle; a balloon string reel rotatably carried within the housing and carrying the balloon string; an electric motor carried within the housing; a power source carried within the housing for powering the electric motor; a gear assembly including a plurality of gears carried with the housing and operable coupling the electric motor to the balloon string reel for driving rotation of the balloon string reel; a biasing member including a biasing force that urges the gear assembly together so that the plurality of gears are engaged for driving rotation of the balloon string reel for drawing in the balloon string and helium-field balloon and allows the plurality of gears to slip relative to each other if tension on the balloon string is too high.

One or more implementations of the aspect of the invention described immediately above include one or more of the following: the balloon toy includes an UP mode where the helium-filled balloon rises, causing the balloon string reel to rotate in a first direction to let out the balloon string and the helium-filled balloon, the balloon toy further including a stop system that allows rotation of the balloon string reel in the first direction and prevents significant rotation of the balloon string reel in a second direction opposite to the first direction, preventing recoil of the balloon string on the balloon string reel as the helium-filled balloon rises; the balloon toy includes a DOWN mode where the stop system is disengaged and the electric motor is actuated, causing the balloon string reel to rotate in the second direction to draw in the balloon string and the helium-filled balloon; the balloon toy includes a BRAKE mode where the stop system is disengaged and the plurality of gears are engaged so that balloon string is not drawn out from the balloon string reel and the balloon string reel does not rotate unless tension on the balloon string is high enough to cause the plurality of gears to slip relative to each other; and/or the balloon toy includes a rocker switch having at least the UP mode, the DOWN mode, and the BRAKE mode, which are mutually exclusive.

A further aspect of the invention involves a method of using a balloon toy including descending the helium-filled balloon by drawing in the balloon string and helium-filled balloon by rotating the balloon string reel through the electric motors and gear assembly; and urging the gear assembly together with a force sufficient for engaging the plurality of gears together for driving rotation of the balloon string reel for drawing in the balloon string and helium-field balloon and sufficient for allowing the plurality of gears to slip relative to each other if tension on the balloon string becomes too high.

One or more implementations of the aspect of the invention described immediately above include one or more of the following: the method further includes ascending the helium-filled balloon by letting out the balloon string from the balloon string reel and rotating the balloon string reel in a direction opposite to a direction for drawing in the balloon string; and preventing significant rotation of the balloon string reel in the direction for drawing in the balloon string and recoiling of the balloon string on the balloon string reel as the helium-filled balloon rises with a stop system; the method further includes actuating a DOWN mode in the balloon toy, the DOWN mode disengaging the stop system and actuating the electric motor to cause the balloon string reel to rotate to draw in the balloon string and the helium-filled balloon; the method further includes actuating a BRAKE mode in the balloon toy, the BRAKE mode disengaging the stop system and engaging the plurality of gears so that balloon string is not drawn out from the balloon string reel and the balloon string reel does not rotate unless tension on the balloon string is high enough to cause the plurality of gears to slip relative to each other; and/or the balloon toy includes a rocker switch having at least the UP mode, the DOWN mode, and the BRAKE mode, which are mutually exclusive, and the method further

includes moving the switch to one of the UP mode, the DOWN mode, and the BRAKE mode.

Other features and advantages of the present invention will become more readily apparent to those of ordinary skill in the art after reviewing the following detailed description and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The details of the present invention, both as to its structure and operation, may be gleaned in part by study of the accompanying drawings, in which like reference numerals refer to like parts, and in which:

FIG. **1** is a perspective view of an embodiment of a balloon toy;

FIG. **2** is a right side elevational view of the balloon toy of FIG. **1**;

FIG. **3** is a left side elevational view of the balloon toy of FIG. **1**;

FIG. **4** is a cut-away simple perspective view of the balloon toy of FIG. **1** and shows the components with a housing of the balloon toy;

FIG. **5** is another cut-away perspective view of the balloon toy of FIG. **1**, showing the components in the housing of the balloon toy; and

FIG. **6** is a cut-away, partial perspective view of the balloon toy of FIG. **1**, showing the components in the housing of the balloon toy.

DETAILED DESCRIPTION

Certain embodiments as disclosed herein provide for a balloon toy **100** and method of use.

After reading this description it will become apparent to one skilled in the art how to implement the invention in various alternative embodiments and alternative applications. However, although various embodiments of the present invention will be described herein, it is understood that these embodiments are presented by way of example only, and not limitation. As such, this detailed description of various alternative embodiments should not be construed to limit the scope or breadth of the present invention.

With reference initially to FIGS. **1-3**, the balloon toy **100** includes a balloon raising and lowering assembly **117** including a housing or casing **101**, an UP/DEFAULT-BRAKE/DOWN switch **102** with push buttons **118**, **119**, a battery access door **103** in a handle **120** near a near rear end **122** of the housing **101**, an opening or small aperture **104** at a front end **124** of the housing **101**, a balloon string **105**, and a helium-filled balloon **106**. Although the housing **101** is shown as heaving a substantially guitar-like configuration, in one or more additional embodiments, the housing **101** may have an alternative configuration to make the toy **100** have an appearance of a cartoon character or any other pleasant form that a child will enjoy.

With reference to FIGS. **4-6**, the internal components of the balloon toy **100** carried within the housing **101** will be described. The balloon toy **100** includes a motor **107** that drives a drive gear **126**, a string reel **108** (e.g., holding about 200-300 ft of string) with string wheel gear **128** and annular stop mechanism **129** having protruding curved stop fingers **113** to prevent string snagging, a spring-biased intermediate gear **109**, a biasing mechanism **130**, a spring **110**, power source/one or more batteries **111** (e.g., AAA 1.5 volt batteries), an electric on/off switch **112**, a stop tab **114**, and a stop-release tab **115**.

In one or more additional embodiments, the location of one or more of the motor **107**, the reel **108**, the switch **102**, and/or the one or more batteries **111** can be other than that shown herein.

Except for the conducting metals in the motor **107** and the one or more batteries **111**, the materials used to fabricate the balloon toy **100** are provided from any suitable source such as, but not limited to, metal, wood, plastics, and the like as well as a combination thereof. Preferably, durable and light-weight plastic materials are preferred such as, but not limited to, high density polyethylene, polypropylenes, polysulfones, and polystyrenes.

The balloon toy **100** will now be described in use. The motor **107** is controlled by the external switch **102** to control the string reel **108**. The switch **102** also has a gear-release function to allow the helium-filled balloon to lift and draw out the string **105** from the reel **108**. When the DOWN button **118** of the switch **102** is pressed, the on/off switch **112** is activated, causing the motor **107** to rotate drive gear **126**. Because intermediate gear **109** is biased against the drive gear **126** and the string reel gear **128** by the biasing mechanism **130** via the spring **110**, the intermediate gear **109** is engaged with the other gears **126**, **128** so that motor rotation causes the reel **108** to rotate and retract the string **105** onto the reel **108** and into the front end **124** of the housing **101**, through the aperture **104**. As the reel **108** retracts the string **105**, the helium-filled balloon **106** exerts pressure on the string **105**. In this mode, the biasing mechanism **130** urges (via the spring **110**) stop-release tab **115** against the stop tab **114**, causing the stop tab **114** to disengage/clear the protruding curved stop fingers/stops **113** of the annular stop mechanism **129**. This allows the reel **108** and annular stop mechanism **129** to freely rotate counter clockwise in FIG. **6** to draw the string **105** in. The amount of biasing force in the biasing mechanism **130** (via the spring **110**) is such that the gears (and/or teeth of the gears) **109**, **126**, **128** slip relative to each other in the event of a high-tension condition in the string **105** (e.g., high-tension in the string **105** caused by high winds, the balloon **106** being caught, the balloon **106** being completely drawn into the toy **100**, etc.) because the tension force on the balloon **106** and string **105** (e.g., from the high wind) can be greater than the strength of the motor **107**, which would compromise (e.g., burn out) the motor **107**. The biasing mechanism **130** solves this problem because it allows the gears **109**, **126**, **128** to slip if the tension is too great. The user can then decide to wait for the high-tension condition to stop (e.g., wind to die down) or decide to use other means to retract the balloon **106** such as manually. When the gears **109**, **126**, **128** slip relative to each other, they make a noise, which also serves as an alarm to the user that the gears **109**, **126**, **128** are slipping and to stop pressing the "DOWN" button **119**.

The switch **102** also has a "DEFAULT" or "BRAKE" position/mode when the DOWN button **118** is not pressed and the UP button is not pressed (i.e., no pressure from the user, which keeps the string reel stationary), where the user can elect the height at which to leave the balloon **106** in the air. In this DEFAULT-BRAKE mode, because intermediate gear **109** is biased against the drive gear **126** and the string reel gear **128** by the biasing mechanism **130** via the spring **110**, the intermediate gear **109** is engaged with the other gears **126**, **128** but the motor is not rotating. As a result, this gear engagement functions as a brake so that the string reel **108** is substantially locked into position so that the length of the string **105** drawn out from the reel **108** is at a desired length and the balloon **106** stays at a desired height. As mentioned above, if a high-tension condition occurs in the balloon **106**/string **105** (e.g., high-tension in the string **105** caused by high winds, the

balloon being caught, etc.), the biasing mechanism **130** solves this problem because it allows the gears **109**, **126**, **128** to slip if the tension is too great. The user can then decide to wait for the high-tension condition to stop (e.g., wind to die down) or decide to use other means to retract the balloon **106** such as manually. Similar to the DOWN condition/position, in the DEFAULT-BRAKE condition, the biasing mechanism **130** urges (via the spring **110**) stop-release tab **115** against the stop tab **114**, causing the stop tab **114** to disengage/clear the protruding curved stop fingers/stops **113** of the annular stop mechanism **129**.

The switch **102** also has UP or release button/function **119** that when pressed allows the balloon **106** to lift and the string **105** to draw out from the reel **108** by the pull of the helium-filled balloon. By pressing on the UP button **119**, the user has complete control of how much string **105** the user wants drawn out from the reel **108** (and the height at which the balloon **106** can fly) limited to the length of the string **105** provided. Pressing on the UP or release button moves the biasing mechanism **130** and the stop-release tab **115** down/away from the stop tab **114**, causing the stop tab **114** to ride along rotation of the annular stop mechanism **129**. This allows the reel **108** and annular stop mechanism **129** to freely rotate clockwise in FIG. **6** to release the string **105** out in one direction only as the balloon pulls on the string **105**. The annular stop mechanism **129** and stop tab **114** (i.e., stop system) prevents the recoil of the string **105** as the helium-filled balloon **106** is released by its own power/pull. The stop tab **114** is activated and engages the protruding curved stop fingers/stops **113** of the annular stop mechanism **129** only if the reel **108** recoils in the wrong direction. As mentioned above, the stop-release tab **115** disengages the stop system **114**, **129** when the motor **107** is actuated because the reel **108**/annular stop mechanism **129** moves in the direction of (against) the stop top **114** when engaged by the motor **107**. The stop system may be referred to as a "feather weight" stop system because the force of the stop tab **114** on the annular stop mechanism **129** is so low/light, that the reel **108** is easily rotated and the string **105** drawn out by the light pull of the helium-filled balloon **106**.

The UP/DEFAULT-BRAKE/DOWN switch **102** prevents the operator from making a mistake because the "UP", "DEFAULT-BRAKE", and "DOWN" positions are the switch **102** are mutually exclusive. Once can not activate one of these conditions/positions without deactivating the other two. The switch **102** is a single-piece rocker style switch with UP button **118** and DOWN button **119** connected by rocker/see saw **132** so that only UP position/mode or DOWN position/mode can be activated at a time. A spring urges the switch **102** into the DEFAULT/BRAKE ON position/mode, which is in the middle/horizontal orientation of the rocker/see saw **132** (neither UP nor DOWN are active in this position). The user can only push UP button **118** or DOWN button **119** temporarily because letting go of either button **118**, **119** causes that respective function to cease and the rocker switch **102** moves to the middle/horizontal orientation (DEFAULT-BRAKE condition).

The above description of the disclosed embodiments is provided to enable any person skilled in the art to make or use the invention. Various modifications to these embodiments will be readily apparent to those skilled in the art, and the generic principles described herein can be applied to other embodiments without departing from the spirit or scope of the invention. Thus, it is to be understood that the description and drawings presented herein represent a presently preferred embodiment of the invention and are therefore representative of the subject matter which is broadly contemplated by the present invention. It is further understood that the scope of the present invention fully encompasses other embodiments that may become obvious to those skilled in the art and that the scope of the present invention is accordingly limited by nothing other than the appended claims.

I claim:

1. A balloon toy, comprising:

a helium-filled balloon;

a balloon string tethered to the balloon; a balloon raising and lowering assembly including:

a housing including a handle;

a balloon string reel rotatably carried within the housing and carrying the balloon string;

an electric motor carried within the housing;

a power source carried within the housing for powering the electric motor;

a gear assembly including a plurality of gears carried with the housing and operable coupling the electric motor to the balloon string reel for driving rotation of the balloon string reel;

a biasing member including a biasing force that urges the gear assembly together so that the plurality of gears are engaged for driving rotation of the balloon string reel for drawing in the balloon string and helium-field balloon and allows the plurality of gears to slip relative to each other if tension on the balloon string is too high,

wherein the balloon toy includes an UP mode where the helium-filled balloon rises causing the balloon string reel to rotate in a first direction, a stop system that allows rotation of the balloon string reel in the first direction and prevents significant rotation of the balloon string reel in a second opposite direction, a DOWN mode where the stop system is disengaged and the electric motor is actuated, causing the balloon string reel to rotate in the second direction, and a BRAKE mode where the stop system is disengaged and the plurality of gears are engaged so that balloon string is not drawn out from the balloon string reel and the balloon string reel does not rotate unless tension on the balloon string is high enough to cause the plurality of gears to slip relative to each other.

2. The balloon toy of claim **1**, wherein in the UP mode the helium-filled balloon rises, causing the balloon string reel to rotate in a first direction to let out the balloon string and the helium-filled balloon, the balloon toy further including a stop system that allows rotation of the balloon string reel in the first direction and prevents significant rotation of the balloon string reel in a second direction opposite to the first direction, preventing recoil of the balloon string on the balloon string reel as the helium-filled balloon rises.

3. The balloon toy of claim **2**, wherein in the DOWN mode the stop system is disengaged and the electric motor is actuated, causing the balloon string reel to rotate in the second direction to draw in the balloon string and the helium-filled balloon.

4. The balloon toy of claim **1**, wherein the balloon toy includes a rocker switch having at least the UP mode, the DOWN mode, and the BRAKE mode, which are mutually exclusive.

5. A method of using a balloon toy, comprising:

providing a helium-filled balloon comprising;

a balloon string tethered to the balloon; a balloon raising and lowering assembly including:

a housing including a handle;

a balloon string reel rotatably carried within the housing and carrying the balloon string;

an electric motor carried within the housing;

a power source carried within the housing for powering the electric motor;

a gear assembly including a plurality of gears carried with the housing and operable coupling the electric motor to the balloon string reel for driving rotation of the balloon string reel;

a biasing member including a biasing force that urges the gear assembly together so that the plurality of gears are engaged for driving rotation of the balloon string reel for drawing in the balloon string and helium-field balloon and allows the plurality of gears to slip relative to each other if tension on the balloon string is too high,

wherein the balloon toy includes an UP mode where the helium-filled balloon rises causing the balloon string reel to rotate in a first direction, a stop system that allows rotation of the balloon string reel in the first direction and prevents significant rotation of the balloon string reel in a second opposite direction, a DOWN mode where the stop system is disengaged and the electric motor is actuated, causing the balloon string reel to rotate in the second direction, and a BRAKE mode where the stop system is disengaged and the plurality of gears are engaged so that balloon string is not drawn out from the balloon string reel and the balloon string reel does not rotate unless tension on the balloon string is high enough to cause the plurality of gears to slip relative to each other;

descending the helium-filled balloon by drawing in the balloon string and helium-filled balloon by rotating the balloon string reel through the electric motors and gear assembly; and

urging the gear assembly together with a force sufficient for engaging the plurality of gears together for driving rotation of the balloon string reel for drawing in the balloon string and helium-field balloon and sufficient for allowing the plurality of gears to slip relative to each other if tension on the balloon string becomes too high.

6. The method of using the balloon toy of claim **5**, further including:

ascending the helium-filled balloon by letting out the balloon string from the balloon string reel and rotating the balloon string reel in a direction opposite to a direction for drawing in the balloon string; and

preventing significant rotation of the balloon string reel in the direction for drawing in the balloon string and recoiling of the balloon string on the balloon string reel as the helium-filled balloon rises with a stop system.

7. The method of using the balloon toy of claim **6**, further including actuating a DOWN mode in the balloon toy, the DOWN mode disengaging the stop system and actuating the electric motor to cause the balloon string reel to rotate to draw in the balloon string and the helium-filled balloon.

8. The method of using the balloon toy of claim **7**, further including actuating a BRAKE mode in the balloon toy, the BRAKE mode disengaging the stop system and engaging the plurality of gears so that balloon string is not drawn out from the balloon string reel and the balloon string reel does not rotate unless tension on the balloon string is high enough to cause the plurality of gears to slip relative to each other.

9. The method of using the balloon toy of claim **8**, further including a rocker switch having at least the UP mode, the DOWN mode, and the BRAKE mode, which are mutually exclusive, and the method further includes moving the switch to one of the UP mode, the DOWN mode, and the BRAKE mode.

* * * * *